

Notice of Allowability

Application No.

10/621,167

Examiner

Timothy L. Rude

Applicant(s)

SHIMOSHIKIRYOH, FUMIKAZU

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 04 June 2007.
2. ☒ The allowed claim(s) is/are 4,10,11,13 and 16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/342,776.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


David Nelms
Supervisory Patent Examiner
Technology Center 2800

tlr

DETAILED ACTION

Claims

Claim 4 is amended. Claim 9 is canceled by Applicant.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows: This application is in condition for allowance except for the presence of claims 5-8, 12, 14, 15, and 17 directed to species non-elected without traverse. Examiner has considered rejoinder, but finds the dependent claims improper to rejoin. Accordingly, claims 5-8, 12, 14, 15, and 17 been cancelled.

Allowable Subject Matter

Claims 4, 10, 11, 13, and 16 are allowed.

Claims 4, 9, 10, 11, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tillin et al (Tillin) USPAT 6,204,904 B1 in view of Matsumoto et al

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(Matsumoto) Electronic Display Devices copyright 1990 John Wiley & Sons Ltd.; Woo et al (Woo) USPAT 6,191,836 B1; and Sharp USPAT 5,751,384.

As to independent claim 4, relevant prior art of record did not disclose, alone or in combination, the liquid crystal display device as claimed comprising the complex set of particular relationships between each of six phase difference compensators (retarders), first liquid crystal domains, second liquid crystal domains, and polarizers (see claim 4).

The closest combination is Tillin et al (Tillin) USPAT 6,204,904 B1 in view of Matsumoto et al (Matsumoto) Electronic Display Devices copyright 1990 John Wiley & Sons Ltd.; Woo et al (Woo) USPAT 6,191,836 B1; and Sharp USPAT 5,751,384.

Tillin discloses a normally black mode homogeneous aligned liquid crystal display device [entire patent, especially col. 5, lines 1-9 and col. 12, line 66 through col. 13, line 29; meets Applicant's new recitations as to liquid crystal orientation in voltage on and voltage off states], comprising:

- a first substrate and a second substrate at least one of which is transparent;
- a liquid crystal layer interposed between the first and second substrates, the layer being made of a nematic liquid crystal material having a positive dielectric anisotropy;

a first electrode and a second electrode provided on the first and second substrates, respectively, for applying an electric field substantially vertical to the first and second substrates across the liquid crystal layer;

a phase difference compensator, 5, provided between the first polarizing plate and the first substrate, wherein the phase-delay axes of the first and second phase difference compensators are parallel to each other and perpendicular to a phase-delay axis of the liquid crystal layer, wherein:

the first and second phase difference compensators compensates for the refractive index anisotropy of the liquid crystal molecules in a substantially horizontal orientation with respect to the surfaces of the first and second substrates in the absence of the applied voltage [col. 4, lines 17-52], the second phase difference compensator provided between the second polarizing plate and the second substrate.

Matsumoto teaches a first polarizing plate provided on an outer side of respective one of the first and second substrates, the first and second polarizing plates being arranged in a crossed Nicols arrangement [bottom of page 43 through middle of page 45] to provide light blocking in one of the switched states (provides contrast) in a non-reflective display.

Woo teaches the use of a liquid crystal layer in each pixel region that includes at least a first domain and a second domain [adaptable to homogeneous mode, col. 5, lines 13-23] in which liquid crystal molecules are oriented in different orientations to provide improved wider viewing angle [col. 2, lines 25-28].

Tillin:

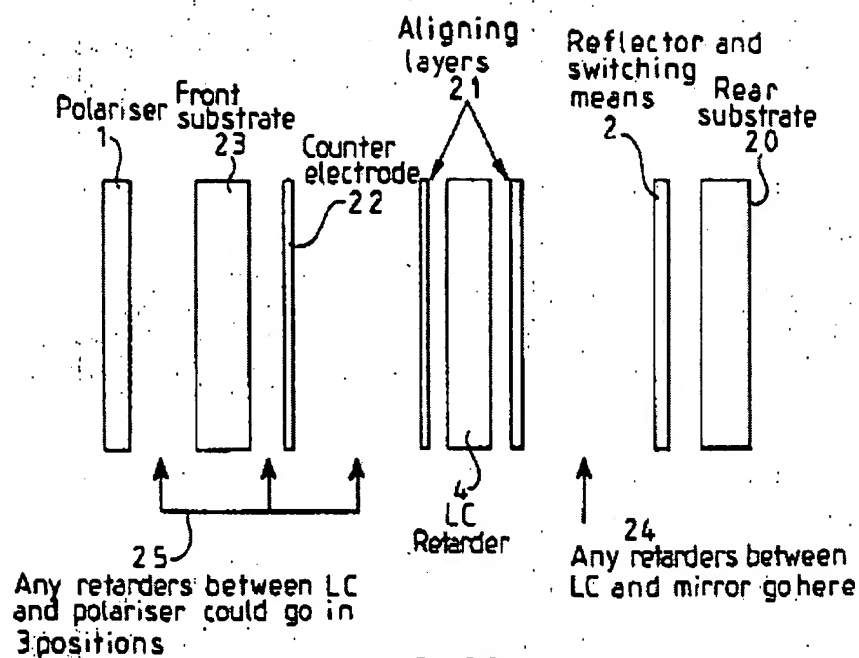


FIG. 22

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Woo:

FIG. 11e

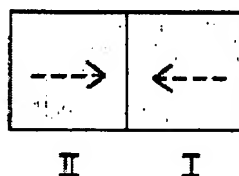
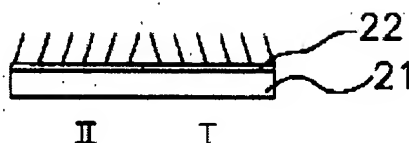


FIG. 11f



Sharp teaches several embodiments of multiple phase difference compensators including the use of a fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially perpendicular to a polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate [Abstract] for better color performance [col. 36, lines 36-40]. Sharp is considered robust teaching for those having ordinary skill in the art of liquid crystals, at the time the claimed invention was made, in the use of up to six phase difference compensators for better phase compensation with motivation to combine.

No prior art reference with proper motivation to combine was found to teach the particular set of relationships.


Dependent claims are allowable due to their proper dependence upon claim 4 with allowable subject matter above.

Conclusion

References cited but not applied are relevant to the instant Application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L. Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


David Nelms
Supervisory Patent Examiner
Technology Center 2800

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude
Examiner
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